OREGON STATISTICAL REVIEW, OCTOBER 1961

(For details see pp. 11-12)

Data that are commonly used to indicate the trend of business activity in Oregon are now so mixed that it is hard to draw conclusions except that there certainly has been no decline from a year ago, and probably a mild improvement. Wage and salary employment in October 1961 was up 1.5 per cent from October 1960, bank debits were up 4.1 per cent, building permits were off 4.3 per cent, local retail advertising linage was 5 per cent off, business failures were fewer and involved less money, and new unemployment claimants were fewer (18,020 the week of mid-November as compared to 22,344 a year earlier).

Oregon is entering the season in which unemployment climbs. There was a slight drop in employment in October from September levels, a considerable jump in new unemployment compensation claims, a slight decline in average weekly earnings of production workers, a considerable decline in man hours in manufacturing, a downturn in building permits, but an upturn in bank debits and retail advertising linage. The preceding paragraph indicates that despite this seasonal slowdown, business activity probably is at a slightly higher level than last year.

The only indicator we have for current retail sales is for department stores and is collected by the Federal Reserve Bank of San Francisco. It shows very little change for the first nine months of 1961 as compared to the first nine months of 1960.

* * *

• **Bank debits** were up by 4 per cent compared to October of one year ago. All areas of the state enjoyed an increase.

* * *

• **Average weekly earnings** of production workers in manufacturing industries were $100.88 in October of this year, a decrease of 65 cents from September. However, it is $4.63 cents above the average for October of one year ago. Average earnings throughout 1961 have remained above the averages for 1960.

* * *

• **Index of man hours** in manufacturing declined from 99.0 in September to 92.6 in October (1951=100). One year ago, the decline was from 98.5 to 90.8 for the same two months.

* * *

• **Lumber.** Both production and inventory have declined from that of October 1960. However, the October 1961 averages for weekly orders and for the backlog of unfilled orders at the end of the month are improved from the figures of one year earlier. These averages have also improved over those for the month immediately preceding.

Implications of Economic Change for Local Government

By JAMES N. TATTERSALL
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Rapid Economic Changes

The fifteen years which have now passed since the end of World War II have brought dramatic changes in the American economy. The most dramatic, perhaps, has been the population boom with all of its implications for the expenditure patterns and social customs of American families. The age structure of our population has changed sharply, since most of the population increase has been concentrated in the age levels under 18 and over 65. The recent census returns surprised many of us with their evidence of pronounced population shifts from rural to urban areas, from central cities to the suburbs, the sharp redistribution of population among the various states and the fantastic growth rate of many of our medium-sized cities. In this postwar period, we have seen many new products become commonplace household items—television has invaded nearly every American home and outdoor recreation has become a major industry. There have been other changes less to our liking. The defense budget, for example, has risen to roughly ten per cent of our national income, a level unprecedented in peacetime. Some of our domestic problems have increased sharply in severity, such as the crime rate, the problem of obtaining large supplies of pure water, and shortages of various critical raw materials. All of these changes, in one way or another, have made their impact felt on the financial programs of our state and local governments. It is my purpose here to explore some of the implications of the rapid changes which are taking place in the American economy for the conduct of state and local finance in the decade to come.

One of the most important changes which has occurred in our economy—and a change which we have been tardy in appreciating—has been the sharp shift in the character of our private and public expenditures over the past decade. Consumer expenditures for services, for example, have been increasing very much more rapidly than expenditures for durable and nondurable goods. From 1950 to 1959, our gross national product—a measure of our total national production—increased by 34.6 per cent in constant dollars. Purchases of consumer durables, however, increased only 25 per cent and purchases of consumer nondurables only 27.6 per cent. Purchases of services by consumers, however, increased by 43.4 per cent.[1] There have also been sharp changes in consumer demand within these broad aggregates. As a result, our economy has been under some stress in trying to make adjustments. Though it is not the whole story, these sharp changes in the kind of things consumers want to buy, coupled with the rapid productivity increases in such areas of our economy as manufacturing and agriculture, have much to do with the present situation in the automobile, steel, and other manufacturing industries, where production recently has been far below capacity, and unemployment has been increasing.

We are all familiar with the steep decline in our farm population over the past decade and the migration of farm people to areas of

[1] *Economic Report of the President, 1960*, p. 156.

Oregon Business Review

Vol. XX EUGENE, OREGON, NOVEMBER 1961 No. 11

BUREAU OF BUSINESS RESEARCH, UNIVERSITY OF OREGON
Wesley C. Ballaine, Director Donald A. Watson, Assistant Director
Catherine Lauris, Editor

Published monthly. Entered as second-class matter, August 10, 1948, at the postoffice at Eugene, Oregon, under the act of August 24, 1912. Persons wishing to receive the *Review* regularly should address requests to the editor. There is no subscription charge.

industrial opportunity. We are perhaps, less familiar with the fact that manufacturing employment in the United States barely increased at all over the past decade and has obviously become a relatively declining sector of our total economy. There is no reason why our economy cannot adjust adequately to this situation, but it does indicate some difficult stresses in the years ahead. These changes in our economy are having a very considerable impact on the type of skills required by our labor force. Generally speaking, there is involved a considerable upgrading in skills, making necessary greater educational preparation and probably more specialized preparation if workers are to find jobs in the labor force at satisfactory wage rates. It is creating a difficult situation, at the present time, in the form of heavy unemployment among the unskilled. Paradoxically, unemployment in some areas of our economy is paralleled by severe labor shortages in others. A considerable amount of retraining and redirection of our labor force is obviously going to be needed.

Impact on State and Local Expenditures

Just as changes in the size, structure, and tastes of our population have brought about sharp changes in consumer demand in the private sector of our economy, so has the impact been felt in the public sector and particularly in the financial demands made on government at the state and local level. Though the size and character of private expenditures and production is determined within the framework of a market economy, and though public expenditures are determined by public bodies through the political process, changes in public expenditures nevertheless represent a response to the same kind of forces which cause business firms to produce television sets instead of crystal sets, motels instead of hotels, and suburban ranch houses instead of city row houses. Purchases of goods and services by state and local governments has been one of the most rapidly growing components of our gross national product over the past decade, increasing by 56 per cent in constant dollars between 1950 and 1959, compared with the 34 per cent increase in the gross national product. *Total* state and local expenditures, after adjusting for inflation, have also increased by about 60 per cent over this period. The rise in state and local government debt since 1950 has been even more rapid than the increase in expenditures.[2] There are a number of observations to make about this rising trend in state and local government expenditures:

1. Though federal and state and local expenditures have increased at approximately the same rate over the past ten years, by far the largest share of the increase in federal government expenditures has gone to pay the cost of the defense program and of programs which are clearly related to the disturbed international situation. State and local expenditures have therefore risen over the past decade at a far more rapid rate than those federal expenditures which are strictly related to the domestic economy. Thus the greatest impact of our population shifts and other changes in the domestic economy have been on the finances of state and local government.

2. The consequent increases in state and local taxes at a time when federal taxes to pay for the defense program have risen steeply, have been a source of alarm to many of our citizens and have met considerable resistance on the part of taxpayers. It should be kept in mind that these increases in expenditures have come at a time when the number of income earners in our population has been increasing much more slowly than the number of dependents, that is, the number of children and old people, which has obviously placed an increasing strain on the income earners. Our state and local governments have not always made it clear to people that these increases in expenditures have been, in very large measure, the result of the changes in our population structure and way of life. The sharpest increases in state and local spending during the last decade were in education, parks and recreation, and highways, reflecting the greatly increased number of children in our population, substantial increases in automobile traffic and in the leisure time of our citizens, and a great increase in inter-urban highway freight traffic. Close behind come expenditures for hospitals, for police services, and for sanitation. Somewhat surprisingly, state and local expenditures for public welfare have increased very little over the decade, no doubt reflecting the increased importance of the federal social security and other federal welfare programs.[3]

3. For the most part, the recent increases in state and local expenditures do not represent an extension of government functions into new areas. Generally speaking, this is also true of the trends in federal domestic expenditures. The proportion of our national income generated by commercial business-type enterprises operated by American governments, such as public power projects, still accounts for only one per cent of our total national income.[4] By far the largest share of the increases in government expenditures have been in those areas which have been traditional functions of government for many years. There is not much support in this fact for the thesis that we are afflicted with creeping socialism.

4. It would be wrong to give the impression that our state and local expenditures and federal expenditures for domestic purposes have always been taking an ever-rising share of our national income and may be always expected to do so. If we go back to the 1930's, we find total nondefense government expenditures were a considerably larger share of our national income than they were in 1950 and a larger share than they are today.[5] There have been downs in the process as well as ups.

[2] *Ibid.*, p. 157, and *Statistical Abstract of the United States, 1960*, pp. 408-409.

[3] *Statistical Abstract of the U. S., 1960*, p. 409.

[4] *Cf* Clair Wilcox, *Public Policies Toward Business*, rev. ed. (Homewood, Ill., 1960), p. 788, and U. S. Dept. of Commerce, *U. S. Income and Output, 1958*, p. 131.

[5] Computed from various issues of the *Statistical Abstract of the U. S.* In 1939, for example, domestic non-defense-related budget expenditures of the federal government (i.e., excluding expenditures for military, foreign aid, veterans, and interest) were 7.9 per cent of the national income compared with 4.5 per cent in 1959. If expenditures on agriculture are excluded, the difference is even sharper —6.4 per cent in 1939, and only 2.8 per cent of the national income in 1959. In 1932, state and local expenditures were 18 per cent of national income compared with 11 per cent in 1957.

5. There is a common tendency to regard government expenditures, at whatever level, as strictly nonproductive. What is paid out in taxes is lost and gone forever, goes the refrain. This does not seem to me a reasonable view. Without going overboard on the point, are not our schools, our public recreational facilities, our water supply and sewage disposal systems, a part of our American standard of living just as are our television sets, washing machines, steak dinners, and night clubs? Comparison with less fortunate parts of the world where such facilities are much poorer in quality might suggest the answer. The additional point could be made that inadequate public services can throttle and inhibit economic growth in the private sector of the economy and inhibit the development of industry in a region or locality just as surely as excessively high or unfair taxes. Perhaps our public officials should be less reticent in bringing this to the attention of our citizens.

State of Oregon

These nationwide trends have had very much the same impact in Oregon, during the past decade, as they have had on the national economy. Our rate of population growth over the past decade has been about the same as that of the nation, and state and local expenditures have increased at much the same rate as they have nationally. Actually, the rate of growth of population and income in our state has been considerably slower since 1955 than it was in the first half of the decade. I have expressed at other times my belief, based on research into the economy of the state, that our state is now passing through a period of relatively slow economic growth, lasting about ten years from 1955 to roughly 1965.[6] This decline in our growth rate stems largely from a slackening of demand for forest products which is the principal basis of our state's economy, stemming in turn from a diminished demand for residential housing related to the drastic changes in the age structure of our population which was mentioned earlier. An additional factor is the relatively slow development of new nonresource-based manufacturing industries, even though such developments in our state have occurred. There is good reason to expect that by the middle of this decade a sharp increase in the rate of family formation will stimulate the demand for construction nationally and thereby stimulate the Oregon forest products industry to new levels of output. Certain other trends, not related to our natural resources, should help to produce a more rapid rate of growth of our entire regional economy. In the meantime, though, a slower rate of growth in the economy of the state does *not* portend a significant easing of the financial demands on state and local government in Oregon. From the point of view of the individual taxpayer, in fact, it tends to make things worse. This is because a slowly-growing regional economy tends to have an out-migration of people. The out-migrants consist disproportionately of income-earners and taxpayers (especially people just reaching working age) while a disproportionate number of people who are dependent on taxes (children and aged people) stay behind. To illustrate this point, let me cite our experience with regard to the trends in state and local government over the past decade. From 1950 to 1959 when growth-rate of the state was fairly rapid, total employment in Oregon grew by 37,000. The growth in state and local government employment during those years was 10,000. From 1955 to 1959, after the slow-down in growth-rate, the increase in total employment was only 23,000. Employment by state and local government however, instead of slowing down proportionately, increased over this period by 13,000, considerably more than in the first half of the decade. The increase in state and local government employment, in fact, accounted for more than one-half of the increase in Oregon employment during 1955-1959, and has accounted for 38 per cent of the increase in Oregon employment over the entire decade.[7] This disparity between the growth of our tax base and the growth of public services no doubt accounts for some of the taxpayer resistance which has been meeting new bond issues and expenditure proposals in the state during recent years, and if the rate of growth of the Oregon economy continues to lag, we must expect the difficulties of state and local finance in the next few years to be compounded. There has, of course, been considerable variation in the rate of growth of different communities in the state, and some of our communities are faced with the problems of very rapid growth at the same time that other communities in the state are striving to cope with problems created by lagging growth and declining employment levels.

Implications for the 1960's

Let me say at once, that I think that all of these problems are soluble, and that over the long pull, we in the Pacific Northwest will be much more concerned with problems of growth than of stagnation. The forces in the American economy which have brought about the rising trend in state and local expenditures are not going to be reversed and may well be accelerated in the 1960's. To cope with the problems mentioned will require new approaches to these problems and greater vigor and imagination than we have shown in the past. Projections for the next decade suggest that total state and local expenditures for all 50 states may rise from 53 billion to 85 billion in constant dollars, or at least 60 per cent in real terms.[8] At the same time, the rise in national gross product may be only about 30 per cent. These projections were made by officials of the Federal Reserve Bank of Chicago, an organization which is not given to "smoking opium." A good part of this rise will occur even if there is no change in the quality of our public services. It is hardly thinkable, however, that there should be no change over the decade in, for example, the quality of our public education, at a time when some of our shortcomings in this area have been brought home to us rather drastically. This further increase in state and government expenditures may not be inevitable but it is highly probable and a considerable rise is likely to occur whether our elected officials over this period are liberal or conservative in outlook, Republican or Democratic.

Need for Long-Range Planning

What does all this mean in terms of state and local finance? First and foremost, it requires a very substantial increase in the attention given to long-range as well as

[6] *Cf* "Performance of the Oregon Economy in the 1950's," *Oregon Business Review*, XIX, 7 (July 1960), pp. 3-5.

[7] Oregon Department of Employment, *Labor Force, Employment, Unemployment, Hours and Earnings, Turnover*, Salem, Oregon, Jan. 1960.

[8] See Lynn F. Anderson, "State-Local Finance in the Sixties: An Overview," *Public Administration Survey*, Vol. 8, No. 2, University, Mississippi, Nov. 1960. See also Dick Netzer, *Financial Needs and Resources Over the Next Decade: State and Local Governments* (to be published by the National Bureau of Economic Research, New York).

short-range budgets, in carefully planning the needs of our communities for a number of years ahead. Some of our units of local government have done a commendable job of long-range planning and have been able to anticipate and meet their needs in advance, but the more usual tendency has been to operate on a crisis-to-crisis basis and to be continually surprised by the kind of crises that arise. What kind of crises can long-range planning and budgeting help us to meet in the 1960's?

In the field of education, our school age population will continue to rise sharply during the 1960's. The trend toward large families which began with World War II has not slowed down. In addition to providing a basic education, we should plan to provide our high school graduates with the increasingly complex tools they need to cope with the drastic changes which are occurring in the structure of our labor force. This will require imaginative new developments in the field of education. We shall need to impart more technical skills. An increasing number of young people will need education beyond the high school period. Enrollment at the University of Oregon is anticipated to increase to 12,000 or above from its present level of 8,000 during the next decade; if anything, this estimate seems conservative. It is doubtful, however, that state universities can provide all the types of education that are needed beyond the high schools, and a very substantial expansion of our junior college system may well be a necessary supplement to the growth of the state colleges.

In the field of recreation, the increased incomes of our population and the trend toward the shorter work-week (which will surely be continued in the sixties) are greatly increasing the recreational mobility of our population, and providing them with increased leisure time. In this connection, let me quote from an address by Dr. Frank L. Kidner of the University of California to the League of Oregon Cities convention in Salem last November. Looking ahead to the 1960's, Dr. Kidner said "For all states, and Oregon is certainly one blessed with nature's resources for recreation, there should be enormous increases in an important industry. I think the tourist industry throughout the West, and in the Northwest in particular, will grow enormously and out of all proportion to earlier history in the course of the next decade. These localities which organize for the servicing of tourists, at all levels of income, will benefit enormously."[9] As Dr. Kidner suggests, there is a great opportunity for the state of Oregon in the area of recreation, with participation by both private enterprise and state and local governments. This industry can become an increasingly important export industry to the state and make a substantial contribution to economic growth. But this will not happen unless we continue to plan carefully and imaginatively in this area, including the preservation as well as the development of our recreational advantages.

A more prosaic matter, but one that is not unrelated, is that of sewage disposal and water pollution. One of our locational advantages in the Pacific Northwest is a large supply of pure water. This advantage can, however, disappear at an alarming rate in the absence of vigilant planning. As an example of the growth of this problem over the past ten years, the number of sewage operators employed by Oregon cities increased from 13 in 1951 to 63 in 1961.[10]

In some communities, we are becoming painfully aware of the consequences of a lack of long-range planning to deal with the parking problem. In this connection, it was interesting to note that the winning entry in the recent contest to design a new Eugene city hall provided for a two-story building in which almost the entire first floor was devoted to parking. This competition was an example of good planning. But how many communities are engaged in thinking that far ahead?

In many American communities, and not only in the largest cities, serious problems of the decay of the downtown area have arisen. Although many communities are participating in urban renewal projects, there is probably a good deal more that could be done along these lines, whether the assistance of the federal government is accepted or not. I should also mention the critical need for improved zoning of residential, commercial, and industrial areas, and for following the zoning pattern, once established, to prevent the depressing and inefficient helter-skelter development which occurs only too readily with unplanned rapid growth.

Finally, we must expect an increasing proportion of aged people in our population, and I think the community has a responsibility to do some planning to assist these elder citizens in such things as obtaining adequate housing facilities, suitable recreational facilities, and filling a worthwhile role in community activities.

Budgeting and Efficiency

Let us expand somewhat on what has been said about the need for efficient budgeting, especially for the development of longer-range budgets. Lynn F. Anderson, assistant director of the Institute of Public Affairs, University of Texas, recently said, "There has been no time in our recent history when efficient budget preparation and administration were more sorely needed to insure program balance and accomplishment on the one hand and fiscal responsibility and solvency on the other."[11] He suggests that we begin in earnest to put into more widespread use the improved budgetry techniques and principles which have been articulated in recent years, and he points out that in the area of performance budgeting, for example, it is little short of amazing how little has been done in the country as a whole notwithstanding the superior accomplishments and records established under this approach in some jurisdictions. Improvement of management and greater financial economy need not be the only objective of budgeting. The annual budget, and longer-range budgets as well, provide an important opportunity to inform the public about what the state or local government is accomplishing and what its needs are for the future. In the next decade, officers of local governments might do well to give more attention to the function of the budget as a mechanism for presenting essential information to the citizens in their jurisdiction and to preparing the budget in such a way that it tells the story that they want to tell clearly and simply.

[9] "A Perspective for the Sixties," address to the League of Oregon Cities convention, Salem, Oregon, Nov. 14, 1960 (mimeo).

[10] Bureau of Municipal Research and Service, University of Oregon, *Information Bulletin No. 83*, Mar. 1951, and *Information Bulletin No. 121*, Feb. 1961.

[11] Lynn F. Anderson, "State-Local Finance in the Sixties: Projected Developments," *Public Administration Survey*, University, Mississippi, Vol. 8, No. 3, Jan. 1961, p. 2.

The increased load on our tax resources in the next decade will require closer cooperation among different levels of government in planning and executing their capital expenditures programs and in submitting them to the voters. Coordination seems especially necessary between separate units of local government and a school district, both of whom are planning long-range expenditure programs.

The circumstances already mentioned will continue to produce pressures for greater efficiency and productivity in the performance of state and local governments. In addition to developments in the field of budgeting, we may see considerable activity in the area of government reorganization. The trend in this direction is already evident at the state level, and in the various consolidations of local school districts that have occurred. We should expect increased efforts to eliminate duplicate functions in local government and a trend toward centralized accounting, financial administration, and tax collection. A trend of a more spectacular kind is the introduction of electronic data processing to the operations of state and local governments, just as this type of operation is now being rapidly expanded to a variety of clerical operations in private industry. The modern devices will be applied initially to relatively large operations, but it would not be surprising to see the engineers come out with "pocket models" for the smaller operations. Electronic equipment of one kind or another, including television, will undoubtedly be used increasingly in the fields of public and higher education, probably reducing to some extent the large additional personnel requirements which we now appear to face. There are various ways, then, in which we should see the productivity and efficiency of governmental operations increased in the next decade, very likely at an even faster rate than has happened in the past.

Methods of Financing

A vital question, of course, is "Where's the Money Coming From?" Our local governments have traditionally relied heavily on the property tax for their revenues but the past decade has pointed up the shortcomings of this tax. The property tax is overwhelmingly a tax on real property, which comprises a relatively small proportion of the nation's total wealth. In turn, about one-fourth of all real property is exempt from taxation. There is a poor correlation between personal ownership of real property and the size of personal incomes; much of the property tax on commercial enterprises may be shifted to consumers; the property tax is thus a regressive tax, though not as steeply regressive as a general sales tax.[12] I think this accounts in part for the resistance to local tax increases which seems to develop to a greater extent in the relatively low income neighborhoods of cities and counties than in the higher-income areas. Many state governments, and Oregon is one, have eased the financial situation of the localities by turning this source of revenue completely over to the local governments. There has been a strong tendency, however, to seek out supplements to the property tax as a source of local revenue and the property tax now accounts for only 49 per cent of the total receipts of local governments.[13] The local governments have been reluctant to turn to such revenue sources as the sales tax and the income tax because of a feeling that the state governments and especially the federal government have "preempted" this source of revenue. The local governments are not quite correct in this analysis; it would be more correct to say that the high marginal rates of the federal income tax have created a situation where there is great taxpayer resistance to the creation or expansion of income taxes at the state or local level. There has been during the past decade, considerable adoption of sales and income taxes by localities in other parts of the country, and we may expect a further trend in this direction, nationally, during the sixties, but of much greater importance as a supplement to the local property tax has been the increase in state aid to local governments. This has approximately doubled over the decade. At the same time, federal aid to state governments has approximately tripled.[14] If we adjust these figures for price increases, however, and also allow for the fact that state and local expenditures have themselves been increasing at a rapid rate, we find that state and federal aid are not a very much larger percentage of the grantee governments' total expenditures than they were in 1950. Certainly over the next decade, federal and state aid will continue to increase in absolute terms but probably not much more than in proportion to total expenditures. It would be unwise, therefore, for the states and localities to expect the main brunt of financing increased public services to be borne by higher levels of government.

In the next decade, then, we shall probably see the property tax continue as a major source of revenue, though continuing to provide a decreasing proportion of the total revenues of local governments. There will be increasing pressure either to levy local sales and income taxes or to have the state act as a collection agency for such taxes and distribute the proceeds to the local governments. It is certain that state and local debt will continue to rise, though probably not as steeply as in the 1950's, when it rose about two and one-half times. Clearly, this situation will test our ingenuity. There are two observations to make about this:

First, the state and local governments have an important stake in the reform of the *federal* income tax, overwhelmingly the major source of federal revenue. Fiscal economists and others have for a number of years been pointing out the need for a drastic overhauling of this tax. The main problem is that Congress established extremely high marginal rates of tax (up to 91 per cent) during World War II and then, refusing to accept the egalitarian implications of such high rates, provided, over a period of time, numerous methods whereby the high rates might legally be avoided. Additional methods of avoidance have been figured out by the numerous tax experts who thrive on complicated legislation. Taxpayers with incomes over $100,000 actually pay approximately 38 per cent of their incomes in federal income taxes, on the average, but the opportunities for avoiding the high brackets are far from

[12] *Cf* C. Ward Macy, "The Property Tax in the Fiscal System," *Proceedings of the Fifty First Annual Conference on Taxation*, National Tax Association, 1958, p. 71, and William J. Schultz and C. Lowell Harris, *American Public Finance*, 7th ed. (Englewood Cliffs, 1959), p. 369.

[13] C. Ward Macy, "Supplementing the Property Tax in Local Government Finance," *Oregon Business Review*, XVIII, 9, Sept. 1959, pp. 1-4.

[14] Shultz and Harris, *op. cit*, pp. 463 and 488.

evenly distributed among taxpayers.[15] It would be possible to reduce the rates for all income brackets including reduction of the highest rates from 90 to around 60 per cent without reducing the total revenues from the tax if at the same time the provisions were simplified and most of the present methods of avoidance were eliminated. A similar operation could be performed on the corporate income tax.[16] With lower over-all federal rates of tax and a more equitable federal tax system the state and local governments should feel less restricted in their ability to raise new sources of revenue.

The second point has to do with the effect of growth of income on our financial problems. If our gross national product during the next decade grows by, say, 45 per cent in real terms rather than the more probable 30 per cent, the problem of financing a 60 per cent increase in state and local expenditures obviously will be easier. This depends to a considerable extent on whether or not we can eliminate a good deal of the slack in the form of excess capacity and unemployment which is now present in our national economy.

Summary

I have suggested that dramatic changes in our population structure and way of life have been occurring in recent years, with consequent great impact on our state and local government expenditures. We may expect a continuation of these trends in the 1960's. The rising expenditures represent, for the most part, an expansion in areas of traditional government activities rather than an expansion into new areas of government activity or increasing competition with private enterprise. We have experienced, and can continue to expect, about the same type and magnitude of problems in Oregon as in the national economy. The situation seems to require, for the sixties, a considerable increase in attention to long-range planning, greater coordination and cooperation among the different levels of government, and increased efforts to improve the efficiency and productivity of governmental operations. Our financial problems, as my brief review of the revenue situation has indicated, will not be easy. They will be more difficult if our national economy does not soon resume at least its historical rate of growth.

The picture I have drawn has its sobering aspects. The United States is, however, a country where rapid changes of one kind or another have always been taking place and where adjustments to rapid change have always been required. We have always managed to make those adjustments and have grown stronger rather than weaker in the process. The changes I have discussed have at any rate had the effect of putting the subject of state and local government finance, long considered a rather dry and relatively minor supplement to the great problems of federal government finance, back on the map both in the curricula of our colleges and in the minds of our citizens.

[15] *Ibid.*, p. 286.

[16] See U. S. House of Representatives, Committee on Ways and Means, *Compendium of Papers on Broadening the Tax Base*, Nov. 16, 1959, especially the papers by Joseph A. Pechman and William F. Hellmuth, pp. 251-316. The corporate income tax rates might be cut by about one-fifth under this procedure compared with a possible cut of about one-third in the individual income tax rates.

Game Theory and the Selection of Stocks

By VERGIL V. MILLER

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The content of this paper is largely based upon an article written by Irving Hale which involves an application of game theory to stock selection.[1] My objective is to facilitate an understanding of basic game theory as applied by Hale.

This new mathematical approach to economics was first advanced by the late John Von Neumann in 1928, and elaborated in 1944 with a major work on the character of games as a model for society.[2]

In Von Neumann's opinion, the application of mathematics to economics had always been confronted with such a baffling number of unruly facts that there was no place to begin the development of mathematical techniques. The absence of a point of beginning required new principles, for the known principles of mathematics could be established only where assumptions were known. Participation in a game of poker demonstrated to Von Neumann a visible interdependence of each player upon the other which determined the winner and the loser; it appeared to be an interdependence identical to that encountered in the social economy. Three basic principles emerged from Von Neumann's observations. Briefly stated, they follow:

(1) No single move of one participant has quality or meaning in itself. It makes sense only as a part of a complete strategy. Not one act, therefore, but only a complete strategy may be assessed rationally. That is, a player's strategy may only be analyzed after several games or acts.

(2) Even a complete strategy of one participant may be judged only on the basis of assumptions or information about the strategies of the other contestants. These other strategies cannot be treated as chance events or as being controlled merely by probabilities. The opponents in the game are assumed to be as rational as the participant under consideration, and, of course, they are in precisely the same quandary as the first player. The strategy of everyone depends upon that of everyone else.

(3) The interdependence of the participants suggests that they all be treated together as a unit, but this is impossible since the opponents do not co-operate. In fact, the primary motive for the "interaction" of each with the other's fate is their opposing and conflicting interests. From this situation there finally arises the fact that opposition and mutual antagonism create a certain interdependence and indivisibility of the opponents' actions, which prohibits treating them as independent individuals; and yet it would be misleading to view them as a co-operating unit. This possibility of self-antagonism within an integrated group is a continuous cause and effect in games, and the problem of group relationships in the economy.

Before John Von Neumann stated his theory, the only

[1] Irving Hale, "The Stock Selection Game Theory," *The Financial Analysts Journal*, Vol. 16, No. 2, Mar.-Apr. 1960.

[2] John McDonald, *Strategy in Poker, Business, and War*, New York: W. W. Norton, 1950.

John Von Neumann and Oskar Morganstern, *Theory of Games and Economic Behavior*, Princeton: 1944.

available tool for playing and studying games had been the theory of probability. The theory of probability, in fact, originated in the study of games of chance, and for such games it is sufficient. For games of strategy, however, it is not sufficient. The *new* theory of games marks a break from classical game theory. Dice, for example, are not capable of exerting a strategy against the player. One knows what to expect of them in the long run on the basis of probability. In strategical games players have a choice of action and their actions are interdependent. Strategical games may also contain either elements of chance or imperfect information or both, notwithstanding the fact that each game is designed to create an uncertainty for the players to overcome. A collection of choices for every possible situation is called a strategy. The theory of games is useful in contests where rational thinking can affect gains. Games theory provides an optimum strategy or combination of strategies to be used in play against an opponent who is presumed to be intelligent, and is free to vary his strategy.

Games may be classified in various ways. First, if the number of players, or teams, or conflicting interests, is n, we speak of an *n-person* game. Because of the geometric increase in the participant interrelationships, the theory increases in difficulty as n increases. For example, as soon as n becomes greater than 2, the possibility arises of two or more players forming coalitions and coordinating their strategies to the detriment of the other players. Developments of this kind certainly are apparent in business, politics, and war.

If whatever any player wins at the end of a game is lost by other players in the game, so that the sum of the *payoffs* (winnings are positive payoffs, and losses are negative payoffs) to *all* the players is zero, then the game is called a *zero-sum game*. Not all games are zero-sum games, however. In many "conflicts" it is reasonable to assume that the value which the winner attaches to what he acquires is more than the price paid, while the price is at least the value attached to what was lost by the seller. In war, however, the material losses of one side are often destroyed and the opposing side gains nothing materially, but it may gain in comparative strength because of the weakening of the enemy through the material destruction.

In context, one may think of n-person games, in which n opponents play. Such games may either be zero-sum or non-zero-sum games, depending on the balance of payments at the end of the game or conflict.

Two basic premises of zero-sum two-person games are that (1) each player is malevolent, or concerned with maximizing his own gains, or minimizing his losses, and (2) each player is aware of, and is intelligent enough to evaluate accurately, the payoffs associated with any combination of each player's alternative strategies.[3] The rational player thus does not try to maximize his gain but takes the alternative course of accepting a limitation on the maximum in the form of an "optimum." In declining the "best" possible outcome, he likewise avoids the "worst" possible outcome.[4] Taking a range of possible high and low gains, or losses, he knows the worst, but to prevent his opponent from finding him out and forcing him to accept the worst, he resorts to chance moves that give him a known probable average outcome. There is no way for an opponent to crack this strategy, for the player who follows it knows what the outcome will be regardless of what his opponent does.

Having reviewed the conditions of true games only enough to recognize that the same conditions exist in economic competition, let us explore the concept of stock selection through game theory.

Edward G. Bennion applied a modified type of game theory to facilitate plant investment decision making, based upon the effect that any one of several future economic conditions might have upon fields of investments in refineries.[5] According to Bennion, "a more rational way to use an economic forecast is suggested. Furthermore, adoption of the method . . . he proposes . . . permits the business man to learn the answer to the question . . . just how far off can the forecast be, before it leads to a 'wrong' investment decision?"

The modified theory of games technique which was contributed by Edward G. Bennion has been adapted to security analysis by Irving Hale in a recent publication, already mentioned. The subsequent application, appearing below, of game theory to security analysis is largely based on Hale's work.

A Simplified Case (2 x 2) Matrix

This first case, although hypothetical, is not wholly unrealistic. In addition, it has the advantage of reducing the problem and the method of solution to the simplest possible proportions.

Alternative Investments. Assume that an analyst cannot decide between two stocks. Each is a "war baby." One manufactures manned bombers in the 750 to 1,500 mph range; the other is engaged in research on rocket engines propelled by liquid hydrogen. The analyst decides with respect to all current conditions considered in stock appraisal, that the companies are equally attractive in every regard and that, in the future, they will be identically affected by every economic factor except one: defense spending. The analyst then makes the following assumptions:

(1) Defense spending in the next x years will either be greatly increased or greatly decreased. There will be no alternatives.

(2) If defense spending were decreased, the Defense Department would emphasize manned bombers as a deterrent to aggression. The first company, Airframe, Inc., would enjoy prosperous times; the return of its common stock (taken here to mean yearly dividends plus annual price appreciation of the common stock) would average nine per cent over each of the next x years.

(3) Under such a decrease the other firm, Hydrorocket Corporation, would lose several contracts and its average return would be three per cent for the same period of time.

(4) If defense spending were increased, manned bombers would be largely abandoned and Airframe, Inc., would bring in only two per cent yearly.

[3] Edward G. Bennion, *Elementary Mathematics of Linear Programming and Game Theory*, Michigan State University Press, 1960, p. 81.

[4] S. Vajda, *The Theory of Games and Linear Programming*, New York: Wiley, 1956.

[5] Edward G. Bennion, "Capital Budgeting and Game Theory," *Harvard Business Review*, Vol. 34, No. 6, Nov.-Dec. 1956.

(5) Under this same condition, research in the use of hydrogen fuel would be encouraged. Hydrorocket Corporation would experience boom times and the stock would return 12 per cent.[6]

The hypotheses may be placed in a 2 x 2 matrix, since one player, the analyst, has a choice of two strategies, as does his opponent, the government.

MATRIX I

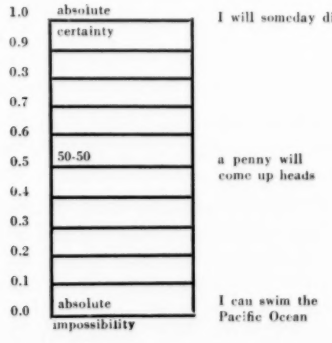
Investment Alternatives	*Defense Spending Alternatives*	
	Decrease	Increase
Airframe, Inc.	9%	2%
Hydrorocket Corp.	3%	12%

The information we have available thus far is insufficient to provide a basis for an investment decision. Two further questions must be answered:

(1) How probable is the most probable forecast of defense spending? To answer this question, the forecast needs to be completed by assigning a *probability coefficient* to each cycle phase considered.

(2) How probable does a decrease in defense spending have to be before the earnings prospects of Airframe, Inc., look just as attractive as the returns available from Hydrorocket Corporation? In other words, what are the *indifference* probabilities of an increase or a decrease in defense spending, given the rate of return each stock will yield?

Probability Coefficients.[7] Establishing probability coefficients on the economic forecast is a job we may relinquish to the company economist. However, a little review of what probability coefficients entail may be helpful.



A Priori Probabilities (Chance). To compute these the formula is simply:

$$\text{probability} = \frac{\text{answer desired}}{\text{number of possible answers}}$$

Therefore: when spinning a penny for a head, the

$$\text{probability} = \frac{1 \text{ head}}{1 \text{ head} + 1 \text{ tail}} = \frac{1}{2} \quad \text{or } .5$$

Also: when tossing a die for the six side, the

$$\text{probability} = \frac{1 \text{ six}}{(1 \text{ one}) + (1 \text{ two}) + (1 \text{ three}) + (1 \text{ four}) + (1 \text{ five}) + (1 \text{ six})}$$

$$= \tfrac{1}{6} \text{ or } .167$$

In order to continue the example, let us suppose that when the analyst asks his economics department for an estimate of the chance of an increase or a decrease in defense spending, he is told that it looks 50-50 either way. Based on the explanation above, we would have a *forecasted probability* of ½ or .5 for either situation.

Indifference Probabilities. Computation of the indifferent probabilities requires a knowledge of elementary algebra. Suppose we assume that the probability coefficient for a decrease in defense spending = D, and the probability coefficient for an increase in defense spending = I. In this case, we know from our figures in Matrix I that the probability of return of Airframe, Inc., is 9D + 21, and that of Hydrorocket Corporation is 3D + 12I. From this expression, it is obvious that the return on Airframe, Inc., will be the same as the return on Hydrorocket Corporation when:

$$9D + 2I = 3D + 12I.$$

Solving this last equation for I in terms of D we get:

$$2I - 12I = 3D - 9D$$
$$10I = 6D$$

Since the sum of the probability coefficients (D + I) must equal 1.0 (as with the coin example, there are only two alternatives and their respective chances total one) we can say that D = (1—I) and substitute (1—I) for D in the above equation. Therefore,

$$10I = 6(1—I);\ 10I = 6—6I;\ 16I = 6$$

Therefore:

$$I = .375;\ D = (1—I) = (1—.375) = .625$$

These figures merely mean that if the probabilities of an increase or a decrease in defense spending are .375 and .625 respectively, then the chances are that the investor will be just as well off investing in either stock. In other words, it appears to be a matter of *indifference* which alternative is chosen.

Assembling the Data. For the sake of convenience, let us reassemble all our information and reconstruct Matrix I:

MATRIX I

Investment Alternatives	*Defense Spending Alternatives*	
	Decrease	Increase
Airframe, Inc.	9%	2%
Hydrorocket Corp.	3%	12%
Forecasted Probabilities	.500	.500
Indifference Probabilities	.625	.375

[6] Hale acknowledges that these assumptions are over-simplified and even erroneous, but they are only intended as an illustration of how a matrix might be constructed.

[7] M. J. Moroney, *Facts From Figures*, Toronto: Penguin Books Ltd., 1957. Chapter 2 of Moroney's book served as a basis for this discussion.

Here, at last, our analyst has all the information he needs to decide what course of action maximizes his chances for success. The forecasted probability of an increase in defense spending occurring is greater than the indifference probability. The analyst, therefore, surveys the returns available under an increase in defense spending. Hydrorocket's return of 12 per cent is the larger of the two; therefore, Hydrorocket is the stock to buy. *Note that the selection to make is the one that has a higher forecasted probability than indifferent probability.*

There is an alternative method of expressing the above decision which should be kept in mind, for it will be used later in a more advanced application of indifference probabilities. We refer to the indifference equation above, $10I = 6D$. Substituting in this equation the forecasted probabilities for I(.5) and D(.5) results in an inequality since 10(.5) is greater than 6(.5). By solving the original equation and including the forecasted probability values we see when solving for I:

$$10I = 6D \quad \text{when } D = .5 \quad 10I = 6(.5) = 3$$

$$\text{that } I = \frac{3}{10} \text{ or } .300$$

and when solving for D:

$$6D = 10I \quad \text{when } I = .5 \quad 6D = 10(.5) = 5$$

$$\text{that } D = \frac{5}{6} = .833$$

It is obvious to the reader that the I and D values violate the fundamental laws of probability because the combined probability coefficients are greater than 1. This is true, but the usefulness of computed values of this type will become apparent in the more complicated example to follow.

When these computed values are compared to the forecasted probabilities in the reconstructed Matrix I, we can see that the new method of computing the indifference probability of I(.33) still results in a figure less than the forecasted probability of I(.500) and that Hydrorocket remains the stock to buy.

Margin of Error. The theory of games as applied here has not only shown the analyst which stock to buy, but it also indicates, by substracting the indifference probability from the forecasted probability that we have a margin of safety equal to .125 per cent. However, if he had desired, the analyst could have simply calculated the probability return of each stock by using only the forecasted data. In so doing he would have used: $3(.500) + 12(.500) = 7.5$ per cent for Hydrorocket Corporation, $9(.500) + 12(.500) = 5.5$ per cent for Airframe, Inc., and would have chosen Hydrorocket stock on the basis of its higher expected return. Employing probability returns as the sole basis for stock selection, however, would not have told the analyst the degree to which the forecast could be changed before his selection would be in error, and it is here that the theory of games transcends that of probability. In the above example, if the forecasted chance of an increase in defense spending were *any value* greater than .375, then Hydrorocket stock would be his best buy; but if it were not greater than .375, then Airframe stock should be bought. In another example, it was shown that when the forecasted probabilities are not .5, but are uneven, the best paying investment alternative in the most probable situation is not necessarily the alternative that an investor should choose.[8]

A (3 x 3) Matrix

To the economic possibilities under consideration (an increase or a decrease in defense spending), the analyst now adds a third: that defense spending will not change. The analyst also considers a third security, a food processing company named Aloha Sugar. The analyst assumes that the stock of this third firm will return six per cent under all conditions, and further decides upon a return of five per cent for Hydrorocket Corporation and four per cent for Airframe, Inc., if there were no change in defense spending. The analyst then asks his economics department for its estimates of the chances for an increase (I), a decrease (D), or no change (N) in future defense spending. The department replies that the chance of each occurring is equal. Since there are three possibilities and the total must equal 1, the probabilities of each occurring are $\frac{1}{3}$ or .333.

MATRIX II

Investment Alternatives	*Defense Spending Alternatives* D	N	I
Airframe, Inc.	9%	4%	2%
Aloha Sugar	6%	6%	6%
Hydrorocket Corp.	3%	5%	12%
Forecasted Probabilities	.333	.333	.333
Indifference Probabilities	.515	.195	.290

The indifference probabilities are calculated in the same manner as used previously for Matrix I. The algebraic expressions appear as follows:

Airframe: $9D + 4N + 2I$
Aloha Sugar: $6D + 6N + 6I$
Hydrorocket: $3D + 5N + 12I$

Solving these resulting equations for D, N, and I, we conclude that our indifference probabilities equal: $D = .515$, $N = .195$ and $I = .290$.

If only one forecasted probability were larger than its corresponding indifference probability, the solution would be easy. In this case, however, we encounter more complications because two of the indifference probabilities are smaller than the forecasted probabilities. In this event an extension of the method of solution is required.

From Matrix II, note that the return of Airframe, Inc., is the greatest of the three companies only in the decrease (D) column, and the smallest of the group in both the no change (N) and increase (I) columns. Airframe, Inc., would merit consideration only if the forecasted probability of a decrease in defense spending (D) were greater than the corresponding indifference value. Such is not the case; therefore, Airframe, Inc., may be eliminated as a possible selection.

We can see from Matrix II, that there was one indifference point when all three stocks were considered. But what

[8] *Op. cit.*, Bennion, *Harvard Business Review*, p. 117.

happens when we eliminate Airframe, Inc., from consideration? There remains an infinite number of indifference points for the two remaining stocks when they are considered by themselves. By setting equal the probability returns for Hydrorocket Corporation and Aloha Sugar we have the following:

$$\text{Hydrorocket} - 3D + 5N + 12I$$
$$\text{Aloha Sugar} - 6D + 6N + 6I$$

Setting the expressions equal:

$$3D + 5N + 12I = 6D + 6N + 6I$$
$$3D = 6I - N$$
$$D = 2I - N/3$$

Even though we make use of the fact that the probabilities of $D + N + I$ must equal 1, the final results are two equations involving three unknowns, a problem which has an infinite number of solutions in algebra. There is a method to circumvent the problem, however. We must return to the alternative justification for the solution of $10I = 6D$ for Matrix I, described earlier. The fact that $10(.5)$, or I, was greater than $6(.5)$, or D, where the first .5 represented the forecasted probability of an increase, and the second .5 the corresponding chance of a decrease in defense spending. The same approach may be applied in the Matrix II case to determine: Whether the chance of a decrease in military spending is greater or less than twice the chance of an increase less one-third the possibility of no change, or stated algebraically: $D = 2I - N/3$. If, through our computations, it is determined that the forecasted probability for a decrease in defense spending is to be greater than the indifference probability, then Aloha Sugar stock would be the best investment, for it returns more (Matrix II) than Hydrorocket under the decreased defense spending. However, if the forecasted probability for a decrease in defense spending is less than the indifference probability, then the stock of Hydrorocket Corporation is the better buy. To make the decision we compute the indifference probability of a decrease in defense spending:

$$D = 2I - N/3 = 2(.333) - \frac{.333}{3} = .666 - .111 = .555.$$

Since the forecasted probability of a *decrease* in defense spending equals .333 (Matrix II) and the computed indifference probability is equal to .555, greater than .333, Aloha Sugar would be discarded in favor of Hydrorocket Corporation.

As a check on the computed decision, the probability returns of the two stocks may be computed using only the forecasted data. To do so, the analyst would compute $3(.333) + 5(.333) + 12(.333)$ or 6.67 per cent for Hydrorocket Corporation, and $6(.333) + 6(.333) + 6(.333)$, equalling 6.000 per cent for Aloha Sugar (which returns six per cent under any condition). The margin of safety in this case is .667 per cent.

In a 3 x 3 matrix, it is much more difficulty to determine the margin of error in a decision. As explained earlier, there are an infinite number of cases in which it does not matter whether Hydrorocket Corporation or Aloha Sugar shares are purchased. To determine the minimum margin of error would require extremely involved mathematical techniques.

It is interesting to note in Matrix II, that the saddlepoint of the matrix falls in row 2, column 2, selecting Aloha Sugar as the safest stock purchase. It appears probable that the mathematical "hair-splitting" in this case could lead to the wrong decision.

Problems Encountered and Criticisms

Similar to many studies which attempt to open new horizons, this one raises more questions than it solves. Some of the more troublesome questions are as follows:

(1) *Capital Gains Versus Income.* It is obviously unsatisfactory to lump capital gains and dividends together under "return." A dividend is usually valued much higher in the stock market than the equivalent amount of capital gains. More sophisticated matrix values would allow for these differences in preference.

(2) *Safety.* If a matrix were set up on the basis of return between government bonds and practically any stock, the stock would almost always appear to be the choice, since stocks bring in more combined income and capital gains than government bonds under most conditions. The values present in matrices should not only represent a balance between dividends and capital gains, but should clearly reflect the degree of safety present in a refined concept of return.

(3) *Choice.* It seems likely that techniques can be devised so that choice of securities could be made under more than just two or three conditions. Perhaps, in time, a method may be found to employ calculus to solve for an optimum investment program based upon any degree of change in military spending.

It is reasonable to assume that the stocks used in this study were thoroughly analyzed and determined to be of equal value under present conditions before modified game theory was applied. The application of game theory in this case was merely a probability solution using the classical theory of games. Thus the indifference probabilities in Matrix II are actually *nature's* probabilities. They tell us that if nature were malevolent, it could minimize its "losses" to the analyst by a decrease, no change, and increase defense spending, in a random manner, 51.5 per cent, 19.5 per cent, and 29 per cent of the time.[9]

(4) *Mixed Strategies.* The theory of games sometimes calls for mixed strategies against an opponent who is intelligent and selfish, and who may also vary his tactics. Though nature (the future of defense spending) is not a willfully greedy or rational opponent, her chance strategies are not only infinite in variety, but constantly changing. If the theory of games could cope with such a state of flux, it would be a most effective tool.

(5) *Game Classification.* The stock selection game demonstrated herein does not fall under a game classification of either the zero-sum or non-zero-sum type. The major deviant is that the stock purchaser would gain positive returns no matter which selection he made, although the total gains might not be maximized.

Another condition not fulfilled is that the investor's gain from one stock selection would not necessarily be the result of a loss to the holders of the stocks of the other (competing) companies.

[9] Bennion, p. 122.

Summary

If the analyst were confronting an opponent who could maximize gains and minimize losses by a deliberate choice of strategies, there would be additional calculations to make and prohibitions to observe. For example, in order to keep a selfish and intelligent antagonist from guessing what he might do and benefiting from the knowledge, the businessman might have to figure out several strategies for himself and then use them at random.

It takes some imagination to make a choice of strategies out of a range of possibilities yet a range of possibilities is all we obtain from nature, as contrasted with a willful opponent. Moreover, nature (defense spending) may have some strategies in the matrix that no sensible antagonist would use at all because under many conditions other strategies would give him higher gains or lower payoffs.

Because of these conditions, the analyst's games with nature are not of the pure type. The version described herein represents a departure by virtue of four qualifications. (1) Nature is not malevolent. (2) The odds of a malevolent nature are really the indifference probabilities of the analyst with respect to his alternative courses of action. (3) When the *estimated* odds of nature's possibilities differ from the analyst's indifference odds, there is a best choice for the analyst. (4) The best choice as well as the degree of safety in the choice, depends on the relationship between the estimated and indifference probability coefficients. And, (5) the game application herein does not fit the zero-sum nor the non-zero-sum game classification.

In the future, game theory may be applied to the businessman's competitive world in a variety of situations that resemble orthodox games. Two major obstacles are quite evident in limiting game theory application, however. The first is the difficulty of accurately quantifying all the variables involved in any situation. The second is the number of assumptions that must be made before the game may be reasonably applied. This stems from the first obstacle mentioned, and from the extreme complications that arise as the number of players and strategies are increased. More knowledge of games and computers may help to rectify these problems in time.

Department store sales. Figures on department store sales are compiled by the Federal Reserve Bank of San Francisco for Oregon, the Portland and Eugene areas, and Salem. The data are released for Portland each week and once a month for all three cities and the state as a whole.

The most recent Portland area data are for the week ending November 4, 1961, when sales were one per cent above those of the corresponding week in 1960.

Sales for the month of September and for the first nine months of 1961 have been compared with those for the corresponding periods one year earlier. Percentage changes are shown in the following table:

	Sept. 1961	*Jan. 1 to Sept. 30, 1961*
Oregon	+5	+1
Portland area	+4	+1
Eugene area	+7	+2
Salem	+6	0

Advertising linage. The Oregon Newspaper Publishers Association reports that for the month of October 1961 there were 598,072 total column inches of local retail advertising in 20 daily Oregon newspapers. This is an increase of 10 per cent over the figure for the preceding month but is 5 per cent below figures for October one year ago.

OREGON STATISTICAL REVIEW

Construction. The Bureau of Business Research, in cooperation with the F. W. Dodge Corporation, reports that September 1961 construction contracts in Oregon had a total value of $36,304,000. This is an increase of 20 per cent above the total for September 1960. Comparative data, in thousands of dollars, follow:

	Sept. 1961	*Aug. 1961*	*Sept. 1960*
Nonresidential	$ 8,771	$ 7,683	$ 9,415
Dwelling units	13,783	16,212	13,685
Public works and utilities	13,750	9,970	7,040
	$36,304	$33,865	$30,140

Nonresidential construction in Oregon in September 1961 totaled 955,000 square feet; for the same month one year earlier, construction totaled 760,000 square feet.

In September 1961 there were contracts for 998 dwelling units, totaling 1,237,000 square feet; for the same month one year earlier, there were 1,098 units, totaling 1,261,000 square feet.

The cumulative total for the first nine months of 1961 shows the value of building contracts in Oregon to be 5 per cent lower than for the comparable period in 1960.

For the 11 western states, the cumulative nine month value continues to be 6 per cent higher than for the comparable period in 1960. For the nation, the cumulative value for the first nine months of 1961 remains at a 5 per cent increase over values for the same period in 1960. None of the preceding figures include public works or utilities.

Employment. Information on employment in Oregon is reported each month by the State Department of Employment in Salem. The latest figures follow:

	Oct. 1961	*Sept. 1961*	*Oct. 1960*
Lumber and wood products	70,000	72,600	71,500
Food and kindred products	23,900	28,500	24,600
Other manufacturing	52,100	53,200	50,200
Total Manufacturing	146,000	154,300	146,300
Contract construction	26,000	27,100	28,300
Retail trade	112,700	115,000	115,400
Government	103,100	102,600	97,000
Other nonmanufacturing	134,400	135,900	130,100
Total nonmanufacturing	376,200	380,600	370,800
Total Wage and Salary Employment	522,200	534,900	517,100
Per cent of unemployment	4.1	3.8	4.4

Index of man hours in manufacturing. A reliable index of change in manufacturing activity is the man hours of industrial production workers. The index is computed by the Bureau of Business Research from data supplied by the Oregon State Department of Employment (1951=100). Figures apply only to personnel engaged in direct manufacturing; sales, office, and general administrative employees are excluded. No adjustment for seasonal variation has been made. The most recent reading for Oregon is for October 1961.

	1961	*1960*
Jan.	74.1	82.9
Feb.	71.4	84.3
Mar.	74.8	85.3
Apr.	81.5	87.9
May	84.4	89.4
June	93.1	94.6
July	93.0	94.1
Aug.	106.9	103.5
Sept.	99.0	98.5
Oct.	92.6	90.8

Average weekly earnings of production workers in manufacturing industries in Oregon provide timely information on current trends of labor costs as well as rough measures of average income available for purchasing goods and services. Both aspects of this information make the figures valuable for consolidation with other data in evaluating the current business situation. Data below are supplied by the Oregon State Department of Employment.

	1961	*1960*
Jan.	$ 97.79	$95.72
Feb.	95.52	96.78
Mar.	97.96	96.47
Apr.	101.83	98.57
May	101.69	98.79
June	101.69	96.70
July	102.56	98.02
Aug.	102.77	97.93
Sept.	101.53	97.57
Oct.	100.88	96.25

OREGON STATISTICAL REVIEW

BANK DEBITS

Bank debits represent the dollar value of checks drawn against the deposit accounts of individuals and business firms. Bank debits are considered good indicators of current activity. But their value for this purpose can be impaired if they include large checks used to transfer funds for the purchase of certain kinds of capital assets that are not "business activity". This month the Bureau of Business Research collected data on bank debits from 230 banks and branch banks.

	Number of banks reporting	Debits Oct. 1961	Debits Sept. 1961	Debits Oct. 1960	Percentage change Oct. '61 compared with Sept. '61	Percentage change Oct. '61 compared with Oct. '60
Oregon	230	$2,193,358,545	$2,054,075,738	$2,106,086,961	+ 6.7	+ 4.1
Portland area (Clackamas, Columbia, Multnomah, Washington counties)	79	1,342,167,120	1,246,299,541	1,330,431,175	+ 7.6	+ 0.8
Mid-Willamette Valley (Benton, Linn, Marion, Polk, Yamhill counties)	43	271,058,256	249,019,129	239,523,573	+ 8.8	+13.1
North Oregon Coast (Clatsop, Lincoln, Tillamook counties)	12	47,597,269	39,539,050	37,086,117	+20.3	+28.3
West Central Oregon (Coos, Douglas, Lane counties)	31	228,252,941	218,520,341	214,327,113	+ 4.4	+ 6.4
Southwestern Oregon (Curry, Jackson, Josephine counties)	15	96,781,543	98,552,845	88,353,122	— 1.8	+ 9.5
Upper Columbia River (Gilliam, Hood River, Sherman, Wasco, Wheeler counties)	10	31,755,113	29,582,709	31,232,218	+ 7.3	+ 1.6
Pendleton area (Morrow, Umatilla counties)	11	38,089,560	39,015,698	37,267,724	— 2.4	+ 2.2
Central Oregon (Crook, Deschutes, Jefferson counties)	6	35,822,116	32,989,850	35,192,136	+ 8.5	+ 1.7
Klamath Falls area (Klamath, Lake counties)	8	42,759,206	40,649,139	39,418,296	+ 5.1	+ 8.4
Baker, La Grande area (Baker, Grant, Union, Wallowa counties)	10	29,527,801	28,984,416	27,546,472	+ 1.8	+ 7.1
Southeastern Oregon area (Harney, Malheur counties)	5	29,547,620	30,923,020	25,698,965	— 4.5	+14.9

BUILDING PERMITS

Building permits are a report of plans rather than of construction in actual operation. Interpretation of these data must allow for time elapsed between the issuing of the permit and the beginning of construction. The information has been collected by the Bureau of Business Research from departments in local government.

	New dwelling units Oct. 1961	New non-residential Oct. 1961	Additions Alterations & Repairs Oct. 1961	Totals Oct. 1961	Totals Sept. 1961	Totals Oct. 1960
Albany	$ 104,700	$ 42,500	$ 17,535	$ 164,735	$ 215,216	$ 106,525
Baker	9,000	75,000	4,350	88,350	240,309	62,670
Beaverton	675,250	140,155	19,700	835,105	192,951	453,395
Bend	53,500	13,600	32,375	99,475	96,740	58,250
Coos Bay	77,800	13,037	20,300	111,137	477,135	70,696
Corvallis	154,000	1,500	5,100	160,600	147,464	357,317
Eugene	842,220	165,637	57,875	1,065,732	1,118,287	812,540
Grants Pass	122,500	1,325	12,600	136,425	128,400	162,850
Hillsboro	156,800	.....	8,200	165,000	160,534	643,276
Klamath Falls	15,500	1,150	444,800	461,450	453,377	91,000
La Grande	191,000	1,000	19,758	211,758	80,755	47,625
McMinnville	26,000	47,000	7,150	80,150	109,150	36,287
Medford	173,400	9,715	184,400	367,515	212,949	479,401
Milwaukie	38,350	.....	39,550	77,900	125,950	99,550
North Bend	.....	15,370	9,700	25,070	59,330	157,287
Pendleton	50,000	10,100	7,147	67,247	47,890	57,225
Portland	597,650	783,970	992,050	2,373,670	3,932,865	2,674,070
Roseburg	223,300	2,450	.....	225,750	76,112	51,767
Salem	237,825	285,263	188,545	711,633	753,306	1,135,100
Springfield	105,276	260,917	22,288	388,481	226,880	216,495
The Dalles	50,760	3,280	9,176	63,216	129,375	53,200
Clackamas County	788,300	52,324	63,425	904,049	662,215	686,825
Douglas County	128,400	7,740	6,840	142,980	663,650	314,740
Lane County	1,006,813	245,513	77,470	1,329,796	1,002,052	1,760,941
Marion County	490,400	732,400	28,055	1,250,855	909,483	427,655
Multnomah County	1,496,518	1,023,823	105,122	2,625,463	3,182,300	2,048,547
Washington County	946,843	217,424	282,800	1,447,067	1,619,567	3,715,597
120 other communities	2,009,658	855,965	489,695	3,355,318	3,860,512	2,991,653
Total	$10,771,763	$5,008,158	$3,156,006	$18,935,927	$20,891,560	$19,972,478

Lumber. These figures were reported by the West Coast Lumbermen's Association. They cover the Douglas fir area of the Pacific Northwest and are in thousands of feet, board measure.

	Oct. 1961	Sept. 1961	Oct. 1960
Average weekly production	144,959	172,502	148,440
Average weekly orders	149,437	141,688	146,470
Unfilled orders, end of month	446,433	424,013	425,726
Lumber inventory, end of month	1,081,863	1,079,145	1,123,965

Banking. Loans, investments, and deposits of Oregon banks that belong to the Federal Reserve System are reported by the Federal Reserve Bank of San Francisco each month. The figures below are in millions of dollars and are for the month ending as of the date shown.

	27 Sept. 1961	30 Aug. 1961	28 Sept. 1960
Loans	$ 942	$ 939	$ 950
Investments	730	705	618
Deposits	1,846	1,797	1,706

Fir plywood. The Douglas Fir Plywood Association's latest quarterly report on fir plywood production, orders, and shipments is for 152 plants in Washington, Oregon, California, and Montana. Recent census data imply that approximately two-thirds of the production comes from mills operating in Oregon. The totals are in millions of square feet.

	January through September 1961	1960	Percentage change
Production	6,299	5,946	+ 5.9
New orders	6,443	5,749	+12.1
Shipments	6,278	5,818	+ 7.9

Business failures. The Dun and Bradstreet series on commercial failures is considered an indicator of business health. The figures for Oregon follow:

	1961 Number	1961 Liabilities	1960 Number	1960 Liabilities
Jan.	21	$ 701,000	41	$ 590,000
Feb.	50	2,454,000	45	1,229,000
Mar.	35	2,403,000	46	1,414,000
Apr.	40	907,000	49	995,000
May	53	1,406,000	38	1,404,000
June	39	734,000	50	1,295,000
July	43	1,105,000	27	378,000
Aug.	53	1,334,000	64	1,746,000
Sept.	41	1,258,000	53	997,000
Oct.	49	1,025,000	60	1,374,000

Electric energy. The Public Utility Commissioner of Oregon reports that 767,503 total kilowatt hours of electricity were sold during September by privately owned electric utilities in Oregon, an increase of 1.3 per cent over sales for the same month one year ago. For the twelve month period ending 30 September 1961, sales had increased 2.2 per cent over the comparable period one year earlier.

Life insurance sales. The Life Insurance Agency Management Association reports that for September 1961 sales of ordinary life insurance in Oregon were 10 per cent lower ($4,305,000) than for the preceding month, and were only 1 per cent above sales for September a year ago. Total national sales of ordinary life insurance for the twelve month period ending September 1961 had increased only 1 per cent over sales for the same period ending one year earlier.

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